SUMMARY OF CHANGES

Final

Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air (Vapor Intrusion Guidance)

Department of Toxic Substances Control California Environmental Protection Agency August 2011

The Department of Toxic Substances Control (DTSC) issued our final *Vapor Intrusion Guidance* in August 2011. The Guidance will assist stakeholders in evaluating the indoor air in buildings at properties contaminated with volatile organic chemicals. The Guidance outlines the methods for evaluating exposure and provides recommendations on the data that should be collected during a site investigation. DTSC generated our *Vapor Intrusion Guidance* as an interim final in 2004 due to growing national concern about this exposure pathway. DTSC received more than 370 public comments on the Guidance and a *Response to Comments* document is posted on our website. The Guidance was revised pursuant to the public feedback and also updated to reflect the current scientific understanding of the pathway.

The following information was added to the Vapor Intrusion Guidance:

- 1) <u>Multiple Lines of Evidence.</u> The approach advocated by ITRC (2007)¹ concerning the use of multiple lines of evidence is integrated into the guidance document (see page 4).
- 2) <u>Installation of Permanent Soil Gas Monitoring Wells.</u> The guidance document provides the scenarios under which permanent soil gas monitoring wells should be installed rather than relying solely on soil gas grab samples (see page 6).
- 3) <u>Soil Gas Sampling.</u> Soil gas samples collected exterior to a building's foundation should be obtained near the source of contamination rather than near the ground surface. Samples collected immediately above the contaminant source are more likely to be representative of what may be in contact with the building's foundation (see page 7).
- 4) <u>Utility Corridor Assessment.</u> Assessment procedures are provided to determine if utility corridors are a preferential pathway for vapor migration (see page 12 and Figure 3).
- 5) <u>Indoor Air Sampling.</u> The document provides guidance on the use of passive samplers for the collection of indoor air samples (see page 30 and Appendix K).
- 6) <u>Outdoor Air Sampling.</u> Appropriate locations for the deployment of outdoor air sampling equipment are discussed (see page 31).

¹ Interstate Technology and Regulatory Council. 2007. Vapor Intrusion Pathway: A Practical Guideline. Technical and Regulatory Guidance, Vapor Intrusion Team. January 2007.

Summary of Changes; Vapor Intrusion Guidance

Confirmation Sampling. The process to verify that cleanup objectives have been achieved is 7) described and a figure is provided indicating the timeframe needed to reach soil gas equilibrium after the termination of soil vapor extraction (see page 38 and Figure 4).

- 8) Analytical Methods. An analytical method is provided for each volatile chemical that might pose a vapor intrusion risk (see Table 1).
- Isolation Emission Flux Chambers. The meteorological and operational factors influencing the collection of representative flux measurements are discussed (see Appendix A).
- 10) Subslab Attenuation Factors. The attenuation factor for vapor migration from directly under a building's foundation to indoor air has been changed from 0.01 to 0.05 (see Appendix B).
- 11) Vapor Intrusion Modeling. Methods are provided for the quantification of the soil effective diffusion coefficient, as follows:
 - Sieve Analysis. Results can be used to determine the correct lithology for use in the United States Environmental Protection Agency's Vapor Intrusion Model. The Model automatically calculates the soil effective diffusion coefficient from the lithology description (see page D-3 in Appendix D).
 - Geotechnical Analysis. The physical properties of the soil can be measured by a laboratory and then input into the United States Environmental Protection Agency's Vapor Intrusion Model (see page D-3 in Appendix D).
 - Field Measurement. In-situ field measurements can be used to determine a soil effective diffusion coefficient (see Appendix I).
- 12) Building Survey Form. Extraneous information was removed from the Survey Form (see Appendix L).

The following information was removed from the Vapor Intrusion Guidance:

1) Vapor Intrusion Mitigation. Due to the complexity of the subject, DTSC generated a standalone advisory² concerning mitigation and, hence, the vapor intrusion guidance only discusses mitigation conceptually.

2) Public Outreach. The vapor intrusion guidance refers the reader to DTSC's upcoming Vapor Intrusion Public Participation Advisory³ for information about public outreach.

Department of Toxic Substances Control. 2011. Vapor Intrusion Mitigation Advisory, Revision 1. California Environmental Protection Agency. August 2011.

Department of Toxic Substances Control. 2011. Vapor Intrusion Public Participation Advisory. California Environmental Protection Agency. Publication Pending.